

Before the  
Federal Communications Commission  
Washington, D.C. 20554

In the matter of )  
 )  
Workshop response – Benchmarks ) GN Docket No. 09-51  
 )

## COMMENTS OF FIRSTMILE.US

FirstMile.US<sup>1</sup> is 501c3 nonprofit organization headquartered in California. Since 2005, our mission has been to educate and advocate regarding the promise of big broadband in the United States. Our vision is that every member of the American public has access to big broadband, the 21<sup>st</sup> century pathway to a better overall quality of life.

Because the FCC sought targeted comments on technical aspects of the definition of broadband, FirstMile.US reached out informally to the technical network community to gather their comments and responses FirstMile.US<sup>2</sup> is 501c3 nonprofit organization headquartered in California. Since 2005, our mission has been to educate and advocate regarding the promise of big broadband in the United States. Our vision is that every member of the American public has access to big broadband, the 21<sup>st</sup> century pathway to a better overall quality of life.

FirstMile.US reached out informally to the technical network community to gather their comments and responses regarding the definition and measurement of broadband. FirstMile.US created a survey utilizing the SurveyMonkey.com toolset. Survey notification was done via email lists, direct email, Twitter, Facebook and LinkedIn. The survey was available online from August 31, 2009 through September 7, 2009.

The survey mechanism was informal but provides a useful set of comments. 134 individuals responded with 105 individuals self-identifying as “super network tech” or “average network tech.”

Recommendations from the survey:

1. Define broadband as the pipe and the protocol but not the application. The end

---

<sup>1</sup> FirstMile.US. <<http://www.firstmile.us>>

<sup>2</sup> FirstMile.US. <<http://www.firstmile.us>>

points of the connection should include either (a) end-to-end link or (b) the local loop plus the middle mile (to an exchange point, collection point, etc.) Note that using the end-to-end link most likely would include multiple providers.

2. Measure what can be measured, technology-independent, but identify the important aspects that cannot be measured.

3. The FCC should define one set of standard, minimum acceptable thresholds, based SOLELY on the performance characteristics, absolutely without regard to the underlying "loop" technology, such as twisted pair, coax, fiber, wifi, wireless telephony (cellular) or other. The FCC must mandate an open-end interface with IPv4 and perhaps IPv6.

4. Specific indicators that should be included in the broadband definition and be measured:

- Upload and download speeds (easy to measure and verify)
- Throughput (easy to measure and verify)
- Latency (easy to measure and verify)
- Availability (it can be measured, but it's hard to verify)
- Reliability (it can be measured, but it's hard to verify)
- Packet loss (easy to measure and verify)
- Affordability (it can be measured, but it's hard to verify)

5. The FCC should not take an application-based approach.

6. The FCC should use the layer model to determine broadband availability: Layer 1 data gives you an idea of what is \*possible\*. Layer 2 data lets you know what is in place and available to consumers. Layer 3 data is likely to be irrelevant if there are multiple providers available at each site, no matter the number of "pipes."

7. The FCC should adopt multiple, escalating tiers of minimum thresholds and should update their definition no earlier than every two years. The technology refresh cycle in large organizations is on a three-year cycle. As such, any definitions and rulemakings should not be any less than this cycle to provide an economically-stable development and implementation window.

8. The FCC should use the following sources to collect and publish meaningful data on broadband deployment and adoption:

- Census data
- Mandate collection from providers
- Commission State PUCs to survey annually
- Pew and Nielsen data
- Open-source, end-user measurement tools (see 9.)



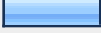
9. User-driven, open-source tools should be developed/implemented to provide automated measurement of broadband benchmarks, analyzed by neutral third-party organization(s).




The survey summary is attached for the FCC's review. FirstMile.US also filed reply comments in this proceeding with detailed survey results.





## FCC Comment on Defining Broadband











1. Please enter your name and email. This will NOT be disclosed to any outside parties. It is only for use of FirstMile.US to followup with you regarding the submission (and get you a copy of the final results.)			
		Response Percent	Response Count
Name:	<div></div>	100.0%	131
Email Address:	<div></div>	96.9%	127
answered question			131
skipped question			3

2. Rank your network tech quotient. (choose one)			
		Response Percent	Response Count
Super network tech	<div></div>	50.4%	66
Average network tech	<div></div>	29.8%	39
Slightly network tech	<div></div>	13.7%	18
Not network tech	<div></div>	6.1%	8
answered question			131
skipped question			3

3. What form should the definition of broadband take? What pieces of a connection should be included in the definition? (choose one)			
		Response Percent	Response Count
Only the pipe (layer 1)		30.3%	40
<b>The pipe and the protocols (layers 1, 2 and maybe 3)</b>		56.1%	74
The pipe, the protocols and the applications		14.4%	19
<b>answered question</b>			<b>132</b>
<b>skipped question</b>			<b>2</b>

4. What form should the definition of broadband take? What parts of the connection should be included in the definition I.E. what end points should be measured? (choose one)			
		Response Percent	Response Count
The local loop		8.3%	11
The local loop plus the middle mile (to an exchange point, collection point, etc.)		44.4%	59
<b>The end-to-end performance</b>		47.4%	63
<b>answered question</b>			<b>133</b>
<b>skipped question</b>			<b>1</b>

5. Should the FCC adopt multiple definitions of broadband? (choose one or more)			
		Response Percent	Response Count
No		61.6%	77
Yes, based on the local loop technology		20.8%	26
Yes, based on geographic location		9.6%	12
Yes, based on type of business, residence, community anchor institution		18.4%	23
Other (please specify)			24
<b>answered question</b>			<b>125</b>
<b>skipped question</b>			<b>9</b>

6. Which of these performance characteristics and specific performance indicators should be included in the FCC's definition? (mark all that apply)			
		Response Percent	Response Count
Jitter		45.3%	58
Latency		78.1%	100
Reliability		68.8%	88
Mobility		22.7%	29
Symmetry		35.9%	46
Packet loss		61.7%	79
<b>Upload and download speeds</b>		<b>83.6%</b>	<b>107</b>
Throughput		81.3%	104
Availability		77.3%	99
QoS		35.9%	46
Other (please specify)			29
		<b><i>answered question</i></b>	<b>128</b>
		<b><i>skipped question</i></b>	<b>6</b>


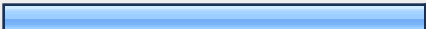
7. What segment of the network should each network performance indicator measure? (choose one per row)				
	Local loop to end user	Local loop to end user plus shared portion of loop to provider	End to end path	Response Count
Jitter	10.6% (11)	<b>47.1% (49)</b>	42.3% (44)	104
Latency	4.3% (5)	46.2% (54)	<b>49.6% (58)</b>	117
Reliability	7.9% (9)	<b>46.5% (53)</b>	45.6% (52)	114
Mobility	30.6% (26)	<b>35.3% (30)</b>	34.1% (29)	85
Symmetry	14.6% (14)	<b>54.2% (52)</b>	31.3% (30)	96
Packet loss	3.6% (4)	47.3% (53)	<b>49.1% (55)</b>	112
Upload and download speeds	9.3% (11)	<b>52.5% (62)</b>	38.1% (45)	118
Throughput	8.5% (10)	41.0% (48)	<b>50.4% (59)</b>	117
Availability	14.5% (17)	<b>44.4% (52)</b>	41.0% (48)	117
QoS	8.7% (8)	44.6% (41)	<b>46.7% (43)</b>	92
	<b><i>answered question</i></b>			<b>125</b>
	<b><i>skipped question</i></b>			<b>9</b>

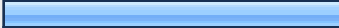

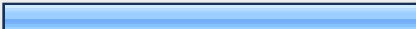


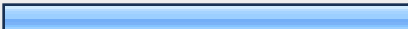
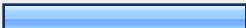
8. Is there a feasible and verifiable way to measure these performance indicators? Base your selections here on how you answered the prior question.

	Yes, it's easy to measure and verify	Yes, it can be measured, but it's hard to verify	No	Response Count
Jitter	<b>56.6% (56)</b>	42.4% (42)	1.0% (1)	99
Latency	<b>73.2% (82)</b>	25.9% (29)	0.9% (1)	112
Reliability	48.6% (53)	<b>51.4% (56)</b>	0.0% (0)	109
Mobility	27.5% (25)	<b>46.2% (42)</b>	26.4% (24)	91
Symmetry	<b>67.0% (65)</b>	26.8% (26)	6.2% (6)	97
Packet loss	<b>74.5% (82)</b>	25.5% (28)	0.0% (0)	110
Upload and download speeds	<b>74.5% (82)</b>	25.5% (28)	0.0% (0)	110
Throughput	<b>63.9% (69)</b>	36.1% (39)	0.0% (0)	108
Availability	<b>56.5% (61)</b>	41.7% (45)	1.9% (2)	108
QoS	30.1% (28)	<b>59.1% (55)</b>	10.8% (10)	93
	<b><i>answered question</i></b>			<b>116</b>
	<b><i>skipped question</i></b>			<b>18</b>

9. How should the FCC determine the minimum thresholds should be assigned to these performance indicators?				
	by application classes (video, semantic web, augmented reality)	by public policy goals (healthcare, energy independence, education, etc.)	by protocol requirements	Response Count
Jitter	37.3% (38)	9.8% (10)	<b>52.9% (54)</b>	102
Latency	38.7% (41)	12.3% (13)	<b>49.1% (52)</b>	106
Reliability	18.4% (19)	<b>45.6% (47)</b>	35.9% (37)	103
Mobility	22.8% (21)	<b>39.1% (36)</b>	38.0% (35)	92
Symmetry	29.6% (29)	21.4% (21)	<b>49.0% (48)</b>	98
Packet loss	33.3% (35)	16.2% (17)	<b>50.5% (53)</b>	105
Upload and download speeds	<b>39.0% (41)</b>	26.7% (28)	34.3% (36)	105
Throughput	31.4% (33)	29.5% (31)	<b>39.0% (41)</b>	105
Availability	20.0% (21)	<b>44.8% (47)</b>	35.2% (37)	105
QoS	33.3% (32)	17.7% (17)	<b>49.0% (47)</b>	96
Other (please specify)				16
<b>answered question</b>				<b>110</b>
<b>skipped question</b>				<b>24</b>

10. Should the FCC base the definition on an application-based approach? (E.G. high speed w/o latency rqmt, slower speed with quality, combined)			
		Response Percent	Response Count
Yes		35.2%	44
No		64.8%	81
<b>answered question</b>			<b>125</b>
<b>skipped question</b>			<b>9</b>

11. If the FCC based the definition on an application-based approach, which applications should be considered? (mark all that apply)			
		Response Percent	Response Count
Federal public policy applications such as healthcare, education, public safety, etc.		51.6%	47
The applications that generate the most usage on the current broadband connections.		62.6%	57
The applications that create the most innovation potential for the US.		63.7%	58
Other (please specify)			29
<b>answered question</b>			<b>91</b>
<b>skipped question</b>			<b>43</b>

12. Should the FCC adoption multiple, escalating tiers of minimum thresholds?			
		Response Percent	Response Count
Yes		62.6%	77
No		37.4%	46
<b>answered question</b>			<b>123</b>
<b>skipped question</b>			<b>11</b>

13. How often should the FCC update the definition of broadband?			
		Response Percent	Response Count
Annually	<div><div></div></div>	28.3%	34
<b>Every 2 years</b>	<div><div></div></div>	<b>45.0%</b>	<b>54</b>
Every 5 years	<div><div></div></div>	29.2%	35
Other (please specify)			23
<b>answered question</b>			<b>120</b>
<b>skipped question</b>			<b>14</b>

14. How will the FCC be able to collect and publish meaningful data on broadband deployment and adoption? Mark all that apply.			
		Response Percent	Response Count
Use Census data (10 year and annual)	<div><div></div></div>	56.2%	68
<b>Mandate collection from providers</b>	<div><div></div></div>	<b>62.8%</b>	<b>76</b>
Commission state PUCs to survey annually	<div><div></div></div>	59.5%	72
Use the Pew and Nielsen data	<div><div></div></div>	43.0%	52
Other (please specify)			33
<b>answered question</b>			<b>121</b>
<b>skipped question</b>			<b>13</b>